

CLAIMS

1. A method for local application of diffusion  
aluminide coating on areas of a metal component to be  
5 exposed to a high temperature gas, comprising:

a component preparation step of exposing local areas  
(damaged areas of an existing coating) of a base material  
of a metal component to be coated, and roughening a  
surface of the base material to a desired surface

10 roughness;

a slurry preparation step of preparing a coating  
slurry that contains a halide activator, a water soluble  
organic binder, and powder of an aluminum-containing  
intermetallic compound;

15 an applying/drying step of applying the coating  
slurry to the local areas of the metal component, and then  
drying the local areas;

a packing step of packing the metal component in a  
heat-resistant container filled with alumina powder;

20 a diffusion treatment step of retaining the heat-  
resistant container at high temperature in an inert  
atmosphere or a reducing atmosphere to diffuse aluminum  
onto the surface of the metal component; and

a cleaning step of taking out the metal component  
25 from the heat resistant container, and removing a slag  
from the surface of the metal component.

2. A method for local application of diffusion  
aluminide coating according to claim 1, wherein  $\text{TiAl}_3$  or  
 $\alpha\text{TiAl}_3$  having a theoretical aluminum ratio of 62.8% by  
weight and containing 0.5% or less impurities is used as  
5 the intermetallic compound.

3. A local application method of diffusion  
aluminide coating according to claim 2, wherein the  
coating slurry is prepared using  $\text{AlF}_3$  as the halide  
10 activator, and mixing the coating source and the activator  
at a weight ratio of 93 to 97: 3 to 7, while using the  
water soluble organic binder.

4. A method for local application of diffusion  
15 aluminide coating according to claim 1, wherein in the  
applying/drying step, the applying and the drying are  
repeated alternately to obtain a slurry thickness of 0.5  
mm or more.

20 5. A method for local application of diffusion  
aluminide coating according to claim 1, wherein in the  
diffusion treatment step, the heat-resistant container is  
retained at 1900 to 2000°F (about 1038 to 1094°C) for  
about 2 to 9 hours.

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6. A method for local application of diffusion  
aluminide coating according to claim 1, wherein the metal

component is a blade, vane, shroud or combustor of a gas turbine.